instruction manual

6" Color Video Wall Panel

(Firmware version G3 or higher)

Touch Panels and Accessories

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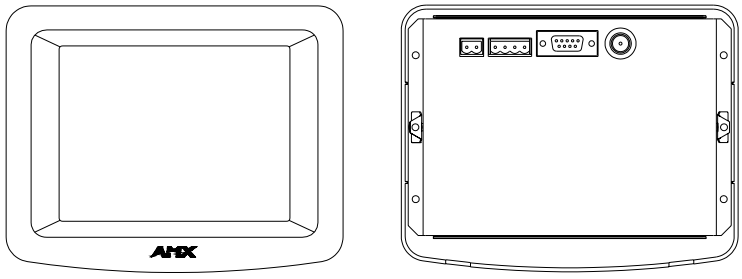
Product Information

The AMX™ Color Video Wall Panel (AXD-CV6) contains a 6" (14.40 cm visible area) 256-color active-matrix liquid crystal display (LCD). The self-contained enclosure uses a microprocessor to control a wide range of multimedia equipment. The TPDesign3 touch panel design program makes it possible to create custom pages with buttons, icons, sliders, bargraphs, time displays, logos, and drawings. The AXD-CV6 (CV6) is designed for wall mounting with a Decor-style bezel and the use of an optional BB-CV6 conduit/wall box for pre-installed surfaces. The CV6 is designed to be mounted to any level surface. FIG. 1 shows the 6" Color Video Wall Panel.



Front view Rear view

FIG. 1 Decor-style Color Video Wall Panel views

Specifications

Specifications	
Dimensions (HWD): AXT-CV6	• Decor Faceplate: 5.37" x 6.79" x 0.30" (13.64 cm x 17.25 cm x 0.76 cm) • BB-CV6 Conduit/Wallbox with connectors: 4.37" x 5.91" x 2.45" (11.09 cm x 15.01 cm x 6.22 cm) • BB-CV6 Conduit/wallbox (without connections): 4.37" x 5.91" x 2.09" (11.09 cm x 15.01 cm x 5.31 cm) • Without connections indicates the depth of the wallbox if the protruding connectors were not considered in the dimensions.
Weight	7.74 lbs. (3.51 kg)
Power Consumption	610 mA @ 12 VDC
Screen Resolution (HV)	320 x 240 pixels
Video Monitor	6-inch (15.24 cm) color active-matrix LCD screen (visible area: 5.16" - 14.40 cm)
Video In	BNC male cable (NTSC/PAL/SECAM)
Memory	512 KB of SRAM and 2 MB of Flash for a total memory of 2.5 MB (only 2 MB is available for buttons, icons, bitmaps, and fonts).

Specifications (Cont.)	
Rear Connectors:	
AXlink	4-pin bus connector for connection to the AMX Central Controller.
PWR	±12 VDC power supply; power is supplied through the bus or an external PSN power supply.
RS-232	DB-9 male connector for data transmission or Microsoft® mouse control
Video	BNC female connector (NTSC/PAL/SECAM)
Character Support	Unicode® character support for far-eastern languages such as Chinese. Characters for middle-eastern languages such as Arabic are not supported within the Unicode fonts because they are bi-directional. Buttons with Unicode fonts can only be created and edited using TPDesign3 and NetLinx Studio. Refer to the respective manuals for additional information.
Compatibility	Axcess, NetLinx, and Landmark systems (AXlink is the most common control standard for this system).
Operating Environment	Indoor operation at temperatures between 0° C (32° F) to 50° C (122° F) and a humidity range of 5% to 90% RH (non-condensing).
Installation Kit	• 4-pin AXlink data/power connector • 2-pin PWR connector • Drywall clip set (2-drywall clamps and 2- #8 (2" long) screws) • 4-#4-40 machine screws and threaded inserts
Enclosure	• Metal sub-plate and bezel with black or white matte finish • Detachable magnetic front panel bezel
Installation Cutout	Cutout Template for the AXD-CV6 is available as drawing number 62-5924-06 and inserted in the product packaging. This file provides 1:1 cutout dimensions for the CV6 conduit/wallbox. For replacement of the cutout, contact your AMX sales representative.
Optional Accessories	• PSN2.8 Power supply (can be used to power the CV6) • PSN6.5 Power supply (recommended to power the CV6) • Optional spacers and bezels for international sales • BB-CV6 Conduit/wallbox (includes flanges for installation to studs during the construction phase). **Conduit/Wallbox should only be mounted to a beam before a drywall is installed (pre-wall).**

Cleaning the Touch Overlay

You should clean the touch screen overlay often. Always use clean cotton cloths, and a spray bottle of cleaning solution consisting of 50% isopropyl alcohol and 50% water.

Installation

Mounting Decor-style Panels

The following paragraphs describe mounting the Decor-style touch panel using the different types of available methods and surfaces.

Mounting the Decor-style panel into a pre-wall conduit box (BB-CV6)

The CV6 Conduit/wallbox is an optional metallic housing that is installed onto a beam in a **pre-wall** setting. The CV6 is housed in a plastic backbox (BB-CV6) that ships with the unit. To install Decor-style touch panels into a conduit/wallbox pre-mounted within a solid surface:

1. Remove the magnetically attached faceplate (**A** in FIG. 2) from the main AXD unit (**B** in FIG. 2) by gripping the faceplate and pulling with gentle force.
2. Remove any necessary wiring cutouts from the pre-installed (optional) conduit box (**C** in FIG. 2) (BB-CV6) where the AXlink cable is threaded through for connection to the touch panel (FIG. 2). The snaps located along the side of the conduit/wallbox can be snapped off or used to mount the unit to a hard surface (like a wooden support beam).

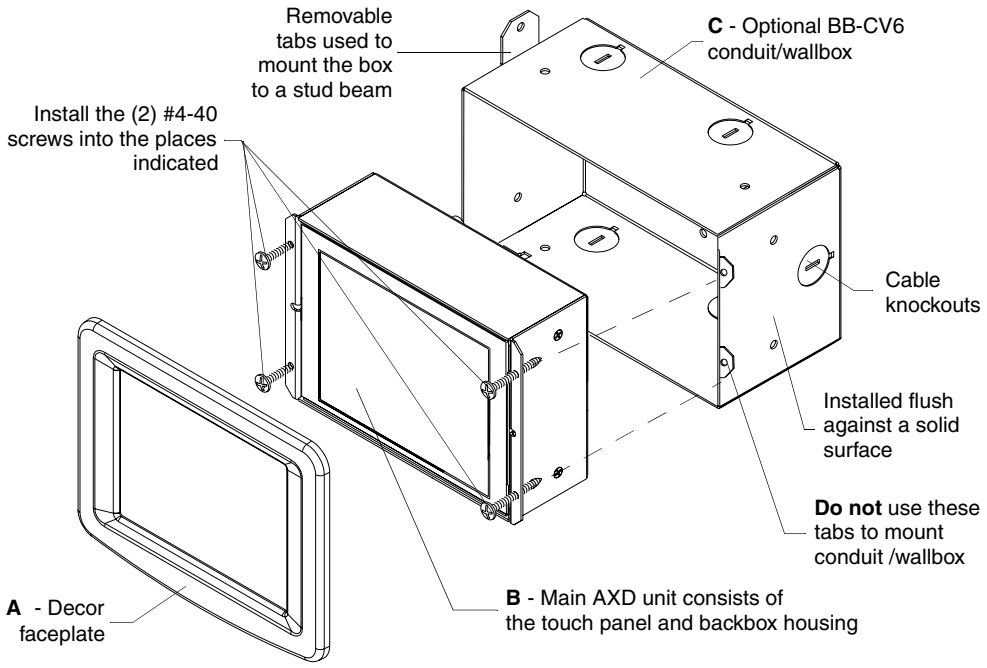

Removable tabs used to mount the box to a stud beam
Install the (2) #4-40 screws into the places indicated
C - Optional BB-CV6 conduit/wallbox
Cable knockouts
Installed flush against a solid surface
Do not use these tabs to mount conduit /wallbox
A - Decor faceplate
B - Main AXD unit consists of the touch panel and backbox housing

FIG. 2 Decor-style panel installation configuration for pre-existing conduit/wall box

3. Thread the incoming AXlink wiring through the knockout.
4. Disconnect the AXlink connector from the Central Controller and thread the terminal end of the 4-pin AXlink cable through the circular cable knockouts provided on the wallbox.
5. Attach the data and power wiring to the touch panel.
6. Test the connection by reconnecting the AXlink connector to the Central Controller.

7. Verify that the panel is receiving power and functioning properly. This should be done to prevent repetition of the installation.
8. Disconnect the AXlink connector from the Central Controller until the installation of the panel is complete.
9. Connect the data and power wiring to the rear of the touch panel.
10. Fasten the BB-CV6 to the stud through the tabs shown in FIG. 3. The wallbox can be secured to the stud by using either nails or screws. This installation must be done prior to any wall installation.

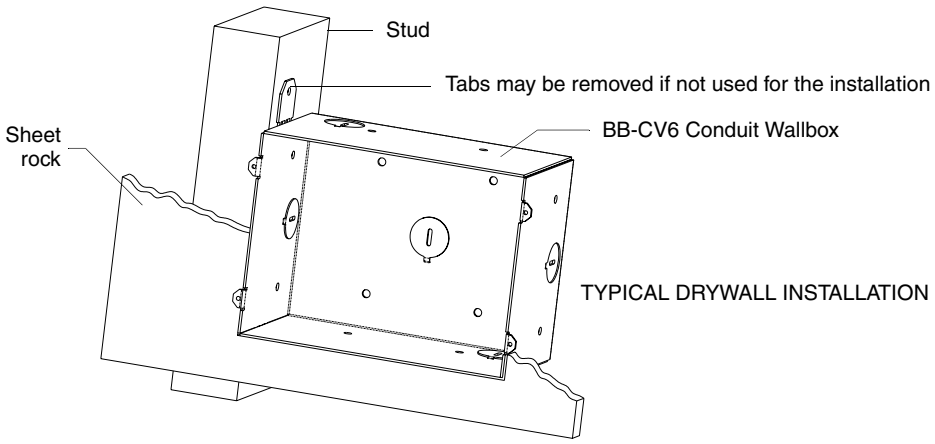


FIG. 3 Screw location for attachment of the BB-CV6 in a typical drywall installation

11. Slide the main unit (**B** in FIG. 2) into the conduit/wallbox (**C** in FIG. 2) until it slides in completely and flush against the wallbox.
12. Use the securing machine #4-40 screws (four provided) to attach the main AXD unit to the wall box. The screws fit in the indicated holes on the main unit (FIG. 2).
13. Place the magnetic faceplate (**A** in FIG. 2) on the main touch panel unit. Make sure the faceplate is flush against the housing and it is secure.
14. Reconnect the AXlink wiring to the Central Controller. The touch panel beeps when power is applied.

Mounting the Decor-style panel on a flat or solid surface

To install Decor-style touch panels:

1. Remove the magnetically attached Decor faceplate (**A** in FIG. 4) from the main AXD unit (**B** in FIG. 4) by gripping the faceplate and pulling with gentle force.
2. Cut out the surface using the dimensions shown in FIG. 5. Be sure not to cut out notches for the expansion clips (only used when mounting the panel in plasterboard). FIG. 6 shows a sample of the CV6 (**62-5924-06**) cutout template used for an accurate visual reference of the cutout dimensions.
3. Thread the incoming AXlink wiring through the cutout on the flat surface.
4. Disconnect the AXlink connector from the Central Controller and thread the terminal end of the 4-pin AXlink cable through the circular cable knockouts provided on the wallbox.
5. Attach the data and power wiring to the touch panel.

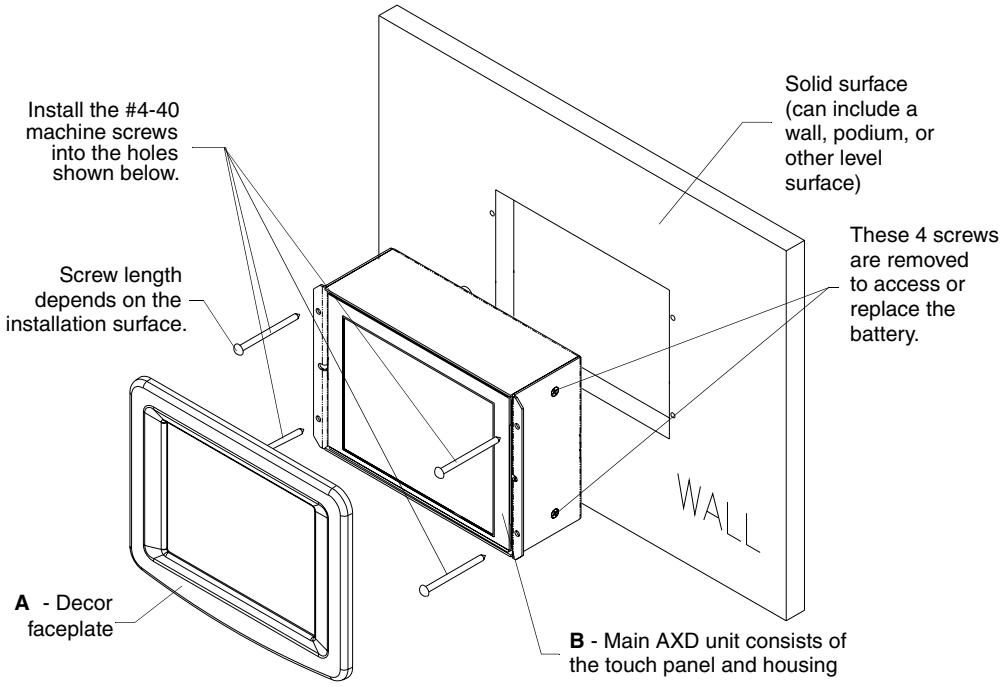

Install the #4-40 machine screws into the holes shown below.
Solid surface (can include a wall, podium, or other level surface)
These 4 screws are removed to access or replace the battery.
Screw length depends on the installation surface.
WALL
A - Decor faceplate
B - Main AXD unit consists of the touch panel and housing

FIG. 4 Decor-style panel installation configuration for flat /solid surfaces

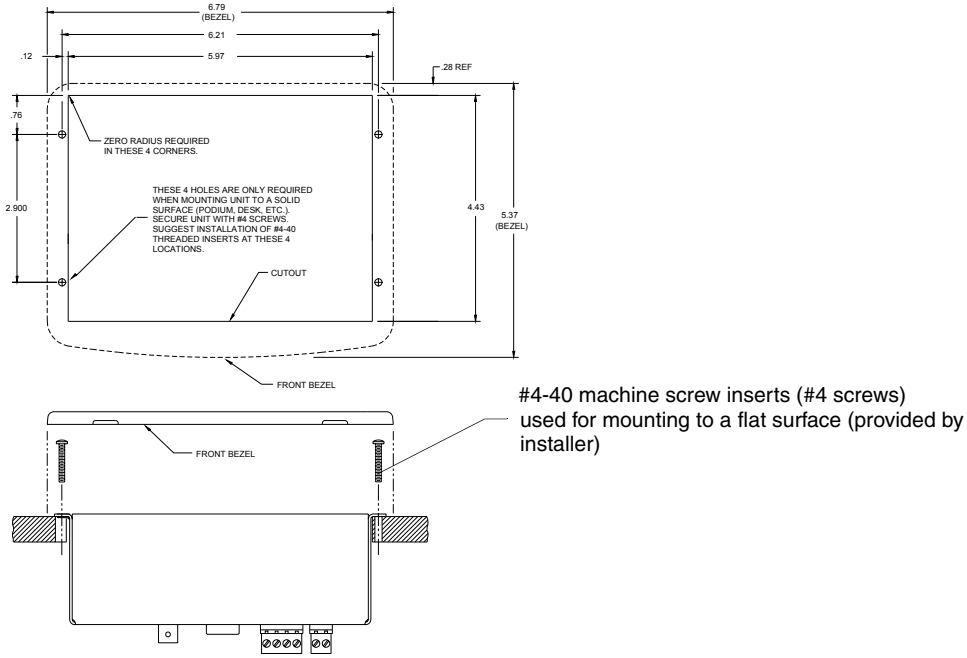
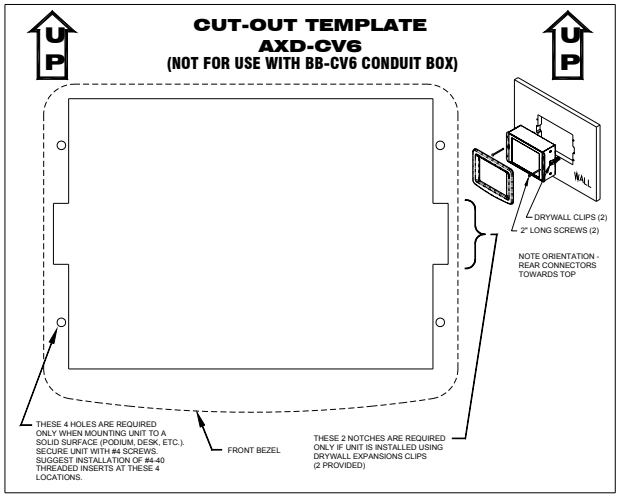

6.79 (BEZEL)
6.21
5.97
.12
.28 REF
.76
ZERO RADIUS REQUIRED IN THESE 4 CORNERS.
THESE 4 HOLES ARE ONLY REQUIRED WHEN MOUNTING UNIT TO A SOLID SURFACE (PODIUM, DESK, ETC.). SECURE UNIT WITH #4 SCREWS. SUGGEST INSTALLATION OF #4-40 THREADED INSERTS AT THESE 4 LOCATIONS.
2.900
4.43
5.37 (BEZEL)
CUTOUT
FRONT BEZEL
FRONT BEZEL
#4-40 machine screw inserts (#4 screws) used for mounting to a flat surface (provided by installer)

FIG. 5 Decor-style panel cutout dimensions for flat surface mounting

6. Test the connection by reconnecting the AXlink connector to the Central Controller. Verify that the panel is receiving power and functioning properly to prevent repetition of the installation.
7. Disconnect the AXlink connector from the Central Controller until installation is complete.
8. Connect the data and power wiring to the rear of the touch panel.


CUT-OUT TEMPLATE
AXD-CV6
(NOT FOR USE WITH BB-CV6 CONDUIT BOX)
UP
UP
WALL
DRYWALL CLIPS (2)
2" LONG SCREWS (2)
NOTE ORIENTATION - REAR CONNECTORS TOWARDS TOP
THESE 4 HOLES ARE REQUIRED ONLY WHEN MOUNTING UNIT TO A SOLID SURFACE (PODIUM, DESK, ETC.). SECURE UNIT WITH #4 SCREWS. SUGGEST INSTALLATION OF #4-40 THREADED INSERTS AT THESE 4 LOCATIONS.
FRONT BEZEL
THESE 2 NOTCHES ARE REQUIRED ONLY IF UNIT IS INSTALLED USING DRYWALL EXPANSIONS CLIPS (2 PROVIDED)

If something happens to the template, contact your sales representative for another copy.

FIG. 6 Sample router cutout dimension template for the CV6

9. Insert the main unit into the flat surface mounting until firmly positioned and flush with the surface battery.

10. Fasten the main AXD unit to the surface using the four surface-screws (#4 screws) supplied with the enclosure (FIG. 7).

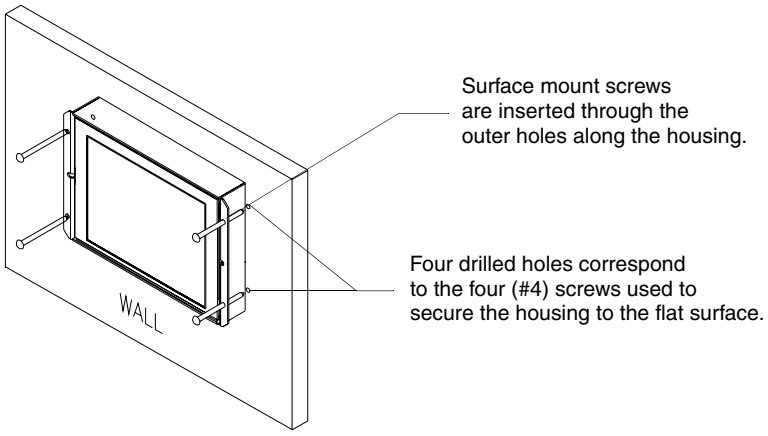

Surface mount screws are inserted through the outer holes along the housing.
Four drilled holes correspond to the four (#4) screws used to secure the housing to the flat surface.
WALL

FIG. 7 Screw locations for flat surface mounting of the main AXD unit

11. Place the magnetic Decor faceplate (**A** in FIG. 7) onto the main AXD unit (**B** in FIG. 7) by gripping the faceplate and placing it on with gentle force.

12. Reconnect the AXlink wiring to the Central Controller. The touch panel beeps when power is applied.

Mounting the Decor-style panel on plasterboard (dry wall)

1. Remove the magnetically attached Decor faceplate (**A** in FIG. 8) from the main AXD unit (**B** in FIG. 8) by gripping the faceplate and pulling with gentle force.

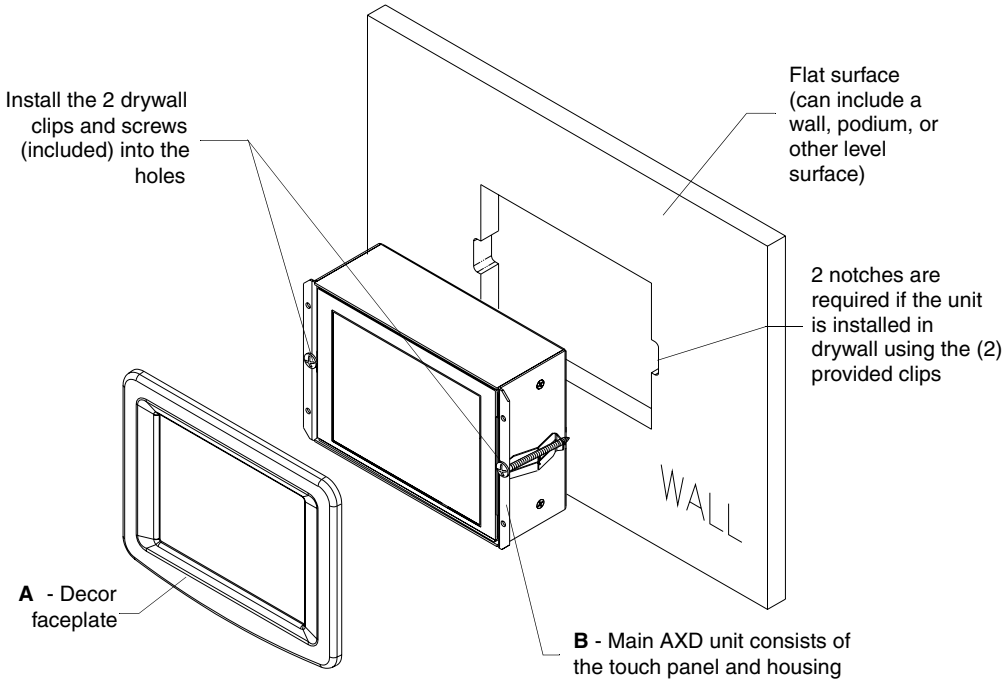

Install the 2 drywall clips and screws (included) into the holes
Flat surface (can include a wall, podium, or other level surface)
2 notches are required if the unit is installed in drywall using the (2) provided clips
WALL
A - Decor faceplate
B - Main AXD unit consists of the touch panel and housing

FIG. 8 Decor-style panel installation configuration for drywall surfaces

WARNING

The drywall clip set must be re-ordered from AMX if the drywall clip is bent accidentally during an installation or removed during a re-installation.

2. Cut out the install surface using the dimensions shown in FIG. 9. Be sure to cut out the two notches along the side of the CV6 to accommodate the two provided drywall expansion clips.

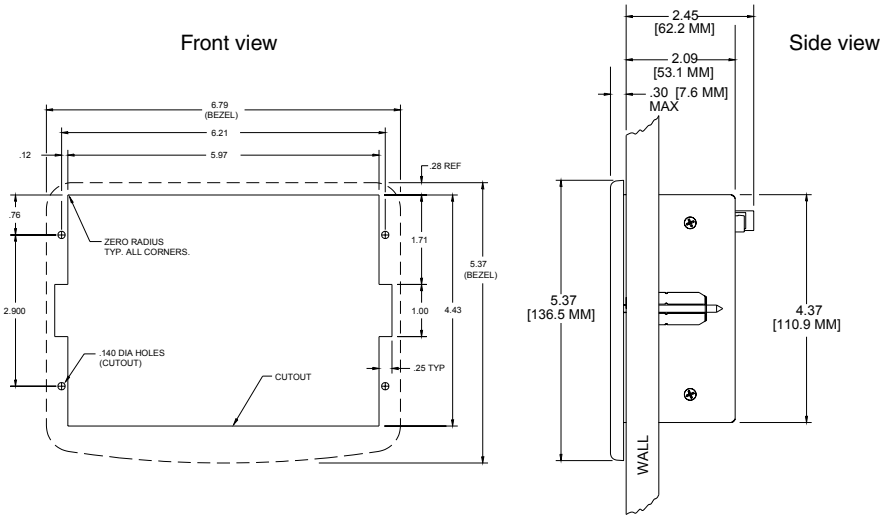


FIG. 9 Decor-style panel installation configuration for plasterboard

3. Thread the incoming AXlink wiring through the cutout in the wall.
4. Disconnect the AXlink connector from the Central Controller and thread the terminal end of the 4-pin AXlink cable through the circular cutout provided on the wallbox.
5. Attach the data and power wiring to the touch panel.
6. Test the connection by reconnecting the AXlink connector to the Central Controller. Verify that the panel is receiving power and functioning properly to prevent repetition of the installation.
7. Disconnect the AXlink connector from the Central Controller until installation is complete.
8. Connect the data and power wiring to the rear of the touch panel.
9. Insert the main unit into the wall cutout until firmly positioned and flush with the wall.
10. Fasten the main AXD unit to the surface using the two (2) drywall clip sets (consisting of screws and clips) supplied with the enclosure (FIG. 10).

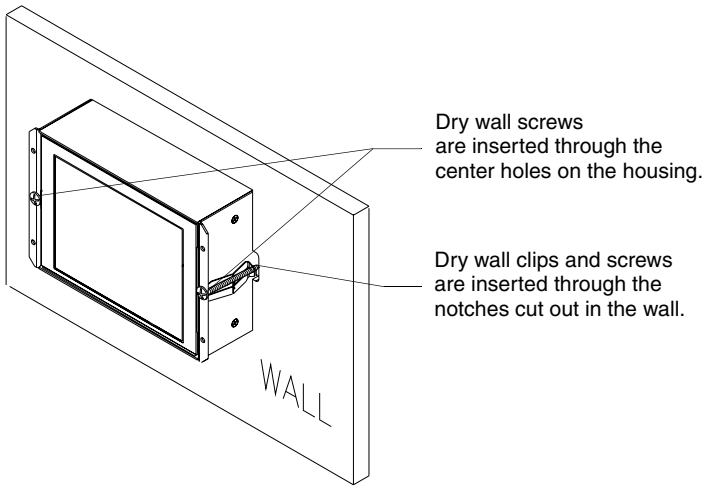

Dry wall screws
are inserted through the
center holes on the housing.
Dry wall clips and screws
are inserted through the
notches cut out in the wall.
WALL

FIG. 10 Screw and clip locations for plasterboard (dry wall) mounting of main AXD unit

11. Place the magnet faceplate (**A** in FIG. 8) onto the main AXD unit (**B** in FIG. 8) by gripping the faceplate and placing it on with gentle force.
12. Reconnect the AXlink wiring to the Central Controller. The touch panel beeps when power is applied.

Wiring the Touch Panel

The touch panel uses a 4-pin AXlink connector for power and data (FIG. 11). If the distance between the panel and Central Controller exceeds power consumption limits, you must connect an optional 12 VDC power supply to the 2-pin PWR connector. If the panel is connected to an AXlink cable and receiving power from a 2-pin PWR connector, power is not sent through the AXlink cable to any connected device.

NOTE

Some installations may require a 90° right-angle BNC adapter to accomodate a sharp bend in the video cable. Be careful not to crimp the video cable and possibly damage the BNC connector by bending the video cable too far.

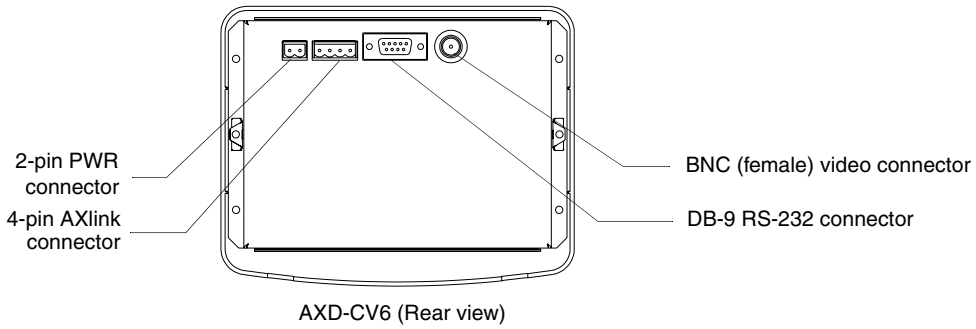


FIG. 11 Rear views of the AXD-CV6 wall panel

Preparing captive wires

You will need a wire stripper and flat-blade screwdriver to prepare and connect the captive wires.

1. Strip 0.25 inch of wire insulation off all wires.
2. Insert each wire into the appropriate opening on the connector according to the wiring diagrams and connector types described in this section.
3. Turn the flat-blade screws clockwise to secure the wire in the connector. Do not over-torque the screws; doing so can bend the seating pin and damage the connector.

CAUTION

Do not connect power to the touch panel until wiring is complete. If you are using a 12 VDC power supply, apply power to the touch panel only after installation is complete.

Wiring guidelines

The touch panel requires 12 VDC power to operate properly. The touch panel can use either a PS(N)2.8 (if the power is being supplied only to the touch panel) or a PS(N)6.5 power supply (if the power is being routed through the touch panel to power another device). The Central Controller supplies power via the AXlink cable or external 12 VDC power supply. The maximum wiring distance between the Central Controller and touch panel is determined by power consumption, supplied voltage, and the wire gauge used for the cable. The table below lists wire sizes and the maximum lengths allowable between the touch panel and Central Controller. The maximum wiring lengths for using AXlink power are based on a minimum of 13.5 volts available at the Central Controller's power supply. Refer to the *Specifications* section on page 1 for more information.

Wiring Guidelines

Wire Size	Maximum Wiring Length
18 AWG	99.47 feet (30.32 m)
20 AWG	62.93 feet (19.18 m)
22 AWG	39.23 feet (11.96 m)
24 AWG	24.73 feet (7.54 m)

If you install the touch panel farther away from the Central Controller than recommended in the Wiring Guidelines table, connect an external 12 VDC power supply to the panel, as shown in FIG. 12 and FIG. 13.

Using AXlink for data and power

Connect the Central Controller's AXlink connector to the AXlink connector on the touch panel for data and 12 VDC power, as shown in FIG. 12.

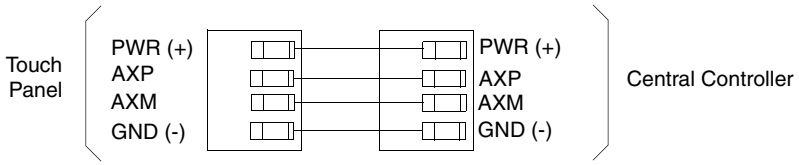


FIG. 12 AXlink wiring diagram

Using AXlink for data with a ±12 VDC power supply

To use the AXlink 4-pin connector for data communication (with the Central Controller) and power transfer (from a power supply), the incoming PWR and GND cable from the power supply must be connected to the AXlink cable connector going to the touch panel. FIG. 13 shows the external power supply diagram.

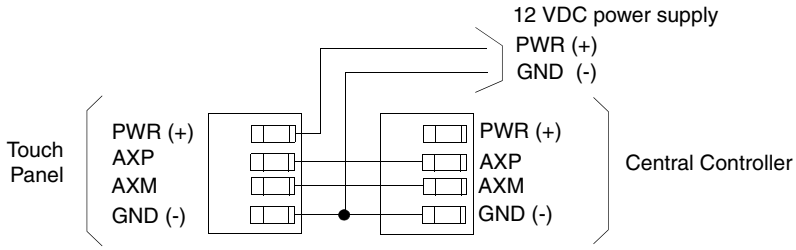


FIG. 13 AXlink and external 12 VDC power supply wiring diagram

1. Unscrew the PWR and GND wires on the terminal end of the power supply's 2-pin cable.
2. Pair the GND wires from the power supply and Central Controller AXlink connectors together; insert them into the clamp position for GND on the touch panel AXlink connector.
3. Tighten the clamp and secure the two GND wires.

Never connect both power wires from the power supply and Central Controller to the PWR terminal on the touch panel AXlink connector. Only the power supply PWR wire should be connected to the touch panel AXlink connector. If both sources are used to provide power to the touch panel, an electrical hazard is created and the threat of both equipment damage and personal injury is likely.

4. Place the PWR wire from the power supply into the open clamp position for PWR on the touch panel AXlink connector.

Using a BNC video cable to provide video input

Connect the control system's video connector to the rear of the AXD-CV6 using a BNC cable to provide a video feed, as seen in FIG. 14.

Some installations may require a 90° right-angle BNC adapter to accomodate a sharp bend in the video cable. Be careful not to crimp the video cable and possibly damage the BNC connector by bending the video cable too far.

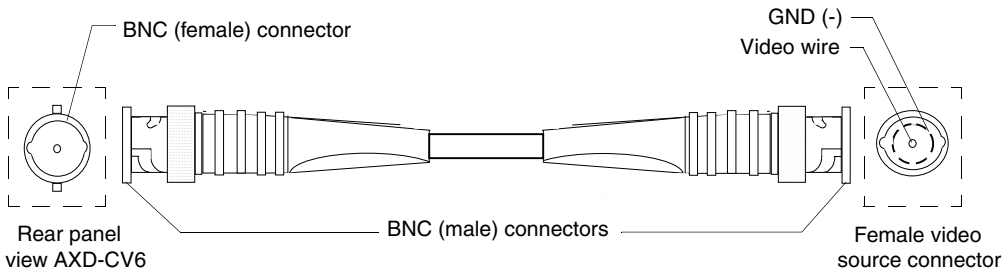


FIG. 14 BNC cable connection from the AXD-CV6 to the video source

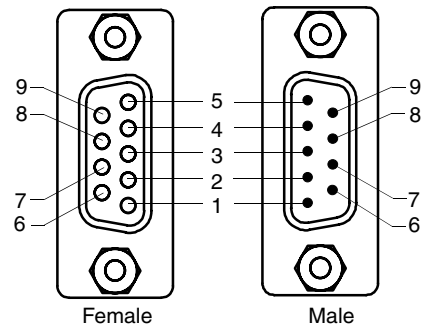
Using the (DB-9) RS-232 connector for mouse control or data

The dual-function (DB-9) RS-232 connector supports most standard serial mouse control devices and RS-232 communication protocols for PC data transmission.

The following table lists the (DB-9) RS-232 connector pinouts and FIG. 15 shows the (DB-9) RS-232 connector and power supply wiring diagram.

(DB-9) RS-232 Connector Pinouts

Pin	Signal	Function
1	N/A	Not used
2	RXD	Receive data
3	TXD	Transmit data
4	DTR	Data terminal ready (not used)
5	GND	Signal ground
6	DSR	Data set ready (not used)
7	RTS	Request to send (not used)
8	CTS	Clear to send (not used)
9	N/A	Not used



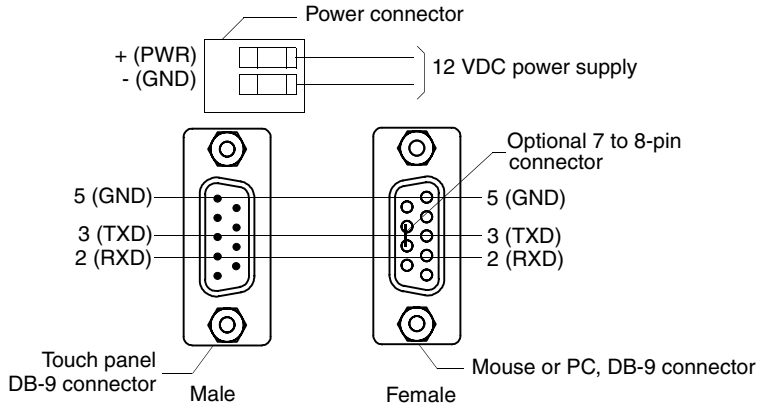


FIG. 15 DB-9 RS-232 connector and power supply wiring diagram

Use connector pins 2, 3, and 5 for data and ground. For some applications, you may need to strap pins 7 (request to send) and 8 (clear to send) together, depending on the PC.

Designing Touch Panel Pages

There are two ways to approach creating touch panel pages:

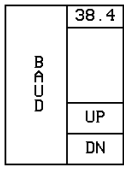
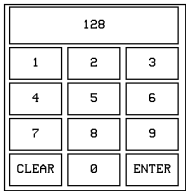
- TPDesign3 - Refer to the *TPDesign3 Touch Panel Program (Version 3. 16)* instruction manual for more information.
- On-board editor

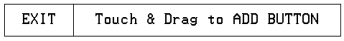
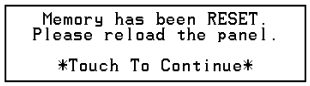
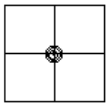
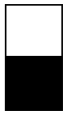
This document describes basic use of the on-board editor to create pages and buttons. Refer to the *G3 Firmware Design and Reference* instruction manual for more detailed firmware information.

Buttons

Standard button types include rectangles and other geometric shapes you can create with the touch panel editor. Buttons are set with attributes, meaning there is a response from the Central Controller when you touch the button.

General buttons are part of the default touch panel program and cannot be changed. General buttons create or revise pages and specify panel communication parameters. Button examples include selection buttons, information buttons, adjustment buttons, and operation bars. The general button categories are described in the table below.

General Button Categories	
Selection buttons	Selection buttons appear on touch panel pages and set communication parameters.
Information buttons	Information buttons contain serial numbers and firmware version information. The properties of these buttons cannot be changed. These buttons have a dark fill and light text.
Adjustment buttons 	You can use the UP and DN buttons to set adjustment buttons. The adjustment button example sets the baud rate for the connection from the touch panel to the computer.
Keypad buttons 	The keypad button opens a keypad so you can enter a password or value assignment. All keypad buttons are interactive except for the entry display.
Decision buttons	Decision buttons appear when an operation has two options and requires verification before an action is performed.

General Button Categories (Cont.)	
Status buttons	Status buttons always have a dark fill with light letters and have no functionality except to display information.
Operation bars 	Operation bars appear in the place of the Editor bar, after selecting a button or page edit operation. The operation bar indicates which edit function is currently active. When an edit operation is selected, it remains active until you press EXIT.
Touch to Continue buttons 	"Touch to Continue" buttons appear when an operation requires user acknowledgement.
Joystick buttons 	Joysticks are vertical and horizontal direction controllers for use with pan and tilt camera controllers.
Bargraph buttons 	Bargraph buttons display a dynamic bargraph (vertical or horizontal). An example is the battery level indicator button.

Activating Edit Mode

Before designing touch panel pages and buttons, you must activate Edit mode. Once activated, use the EDIT button to enter Edit mode. This mode has options to add and configure touch panels and buttons. When powering up the touch panel, the first page is the Main page (see FIG. 16). Note that the Edit button is not available initially. If you have a pre-programmed panel, you may not see the Main page.

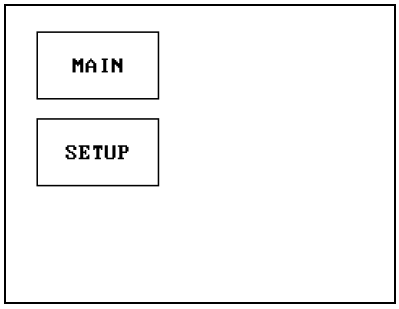


FIG. 16 Main Page

To activate edit mode:

1. Press SETUP in the Main page to open the Setup page (FIG. 17).
2. Press PROTECTED SETUP to open the keypad.
3. Enter 1988 (default password) in the keypad and press ENTER to open Protected Setup page. If you press ENTER after typing an incorrect password, you are immediately returned to the previous page.

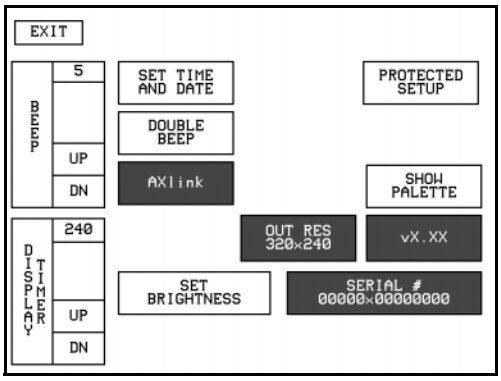


FIG. 17 Setup page

4. Press EDITOR to enable Edit mode. The EDITOR button is highlighted in the Protected Setup page when enabled, as shown in FIG. 18.

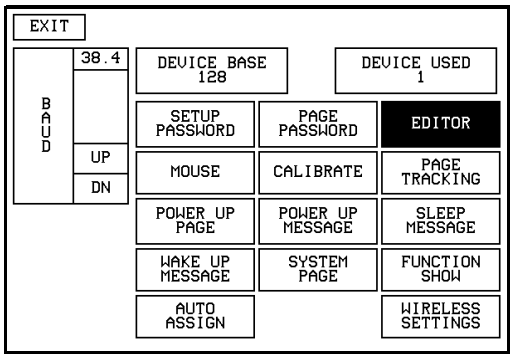


FIG. 18 Protected Setup page with the active EDITOR button

5. Press EXIT to close the Protected Setup page and return to the Setup page (now the Edit mode).

6. Press EXIT again to return to the Main page. The EDIT button appears at the top of the page indicating Edit mode is active.

7. Press EDIT to open the Edit bar. The BUTTON and PAGE options, in the Edit bar, (FIG. 19) are used to design and modify button and page settings.

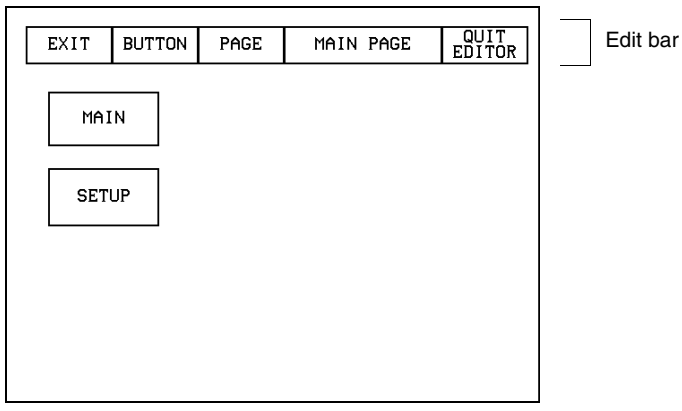


FIG. 19 Main page with Edit bar

Setting the Device Base

Press the DEVICE BASE option, in the Protected Setup page (FIG. 18), to assign a base (starting) device address to the touch panel.

1. Enter the base address for the touch panel. The base address range is from 1 - 255. Standard device addresses begin at 128.
2. Press ENTER to save.

Setting the Device Used

Use the DEVICE USED option in the Protected Setup page (FIG. 18) to assign a value for the number of devices being controlled by the touch panel.

1. Press DEVICE USED to open the keypad and enter the panel's device number from 1 - 4. Each device number supports up to 255 programmable channel codes. The multiple device settings allow you to create up to four unique touch panel buttons and/or pages. This value is used to determine the current device being used by the panel.
2. Enter the number of devices being used by the touch panel.
3. Press ENTER to save the value.

Adding a Page

1. Press PAGE on the Edit bar to open the PAGE menu.
2. Press ADD to open the keyboard and enter a name for the new page. Page names can be up to 20 characters.
3. Press EXIT CHANGE to save, close the keyboard, and go to the new page.

Setting the page color

1. Press EDIT to open the Edit bar on the newly created page.
2. Press PAGE on the Edit bar to open the PAGE menu.
3. Press PAGE COLOR to open the color palette.
4. Select a color from the palette; the page automatically changes to the new color.

Adding a Button

To add a button to the current page:

1. Press BUTTON on the Edit bar to open the BUTTON menu.
2. Press ADD to open the ADD BUTTON operation bar. On the LCD screen, touch and drag to create a button. The first touch point is the upper-left corner of the button.

Resizing a button

1. Press BUTTON on the Edit bar to open the BUTTON menu.
2. Press RESIZE. Then, touch any edge of the button and drag. Removing your finger from the panel saves the button dimensions.

Defining On-Screen and External Button Properties

External pushbuttons are configured with features similar to on-screen buttons. Their functionality can be set just as any other button on the touch panel.

Use the PROPERTIES option of the BUTTON menu in the Edit bar to set button borders, page flips, button colors for channel on/off conditions, channel/variable text codes, and string/macro assignments.

External button properties include only the button type, page flips, channel codes, and string/macro assignments. Although the Border and Color sections of this page appear, they are of no use to external pushbuttons since they do not appear on-screen.

To set button properties:

1. Press BUTTON on the Edit bar to open the BUTTON menu options.
2. Press PROPERTIES to open the PROPERTIES operation bar.
3. Press the new button to open the Button Properties page. This page lists the properties for the active button.
4. Press BUTTON TYPE; this opens the BUTTON TYPE menu.
5. Choose a button type for the selected button to open the associated Button Properties page. Each button type has its own Button Properties page with settings specific to the button.
6. Press BORDER to open the BUTTON BORDER pages.
7. Select a border to set for the button and return to the Button Properties page. The BORDER button changes to show the selected border type.

Setting the channel code

The channel button sets the device and button channel codes. Channel codes and variable text codes work the same for all button types, including joysticks and bargraphs.

1. In the Button Properties page, press DEV to open the keypad and set the touch panel's device number.
2. Enter 1, 2, 3, or 4 in the keypad. The programming software uses device codes 1 - 4 to identify the touch panel. Refer to the *G3 Firmware Design and Reference* instruction manual for more information.

If DEVICE USED is set to 4 and Base Device Number is 128, the Controller recognizes bus devices 128 - 131.
The panel will not allow you to enter a device number greater than the DEVICE USED without first displaying a decision box asking if you accept the new selection or not.

3. Press ENTER to save the device number, close the keypad, and return to the Button Properties page.
4. Press CHAN to open the keypad and enter a channel value of 1 - 255. The source code uses the channel code number to identify the button and its programmed operations. The channel code for non-active buttons is 0.
5. Press ENTER to save the channel number, close the keypad, and return to the Button Properties page.

Setting the variable text code

The variable text buttons set the device and button channel codes for the buttons.

1. Press DEV to open the keypad and set the device number.
2. Enter 1, 2, 3, or 4 in the keypad. The source code uses device codes 1 - 4 to identify the touch panel.
3. Press ENTER to save, close the keypad, and return to the Button Properties page.
4. Press CHAN to open a keypad and set the channel number.
5. Enter a channel value of 1 - 255 in the keypad. The source code uses the channel code number to identify the button and its operations.
6. Press ENTER to save the channel number, close the keypad, and return to the Button Properties page.

Setting the page flip

1. Press the PAGE FLIP TYPE button (FIG. 20) in the Button Properties page to open the PAGE FLIP TYPE menu.

FIG. 20 Page FLIP Type button

2. Select a Page Flip type. If you select FLIP STANDARD in the PAGE FLIP TYPE menu, the FLIP TO PAGE button appears.
3. Press the FLIP TO PAGE button (FIG. 20) to open a list of all the saved touch panel pages. If the desired page is not present in the menu, check to verify the page has been saved.
4. Select the target page for the page flip.

Setting the button colors for channel-off conditions

1. Press any button to open the Button Properties page.
2. Press BORDER under CHANNEL OFF in the Button Properties page. The color palette appears. Select a color to set as the border.
3. Press the FILL button in the Button Properties page to open the palette. Select a color to set as the fill.
4. Press the TEXT button to open the palette. Select a color to use for the text.
5. Press EXIT SAVE CHANGE in the Button Properties page to save the new button properties and return to the current page.

Adding text, icons, and bitmaps to a button

1. Press BUTTON on the Edit bar to open the BUTTON menu.
2. Press TEXT/IMAGE to add text to the button. The TEXT/IMAGE operation bar appears.
3. Press any button to open the Text/Image page.

4. Go through each option and set as desired:
   - TEXT OFF and TEXT ON sets the text for the button's Off and On state.
   - ICON OFF and ICON ON sets the icon for the button's Off and On state.
   - BITMAP OFF and BITMAP ON sets the bitmap for the button's Off and On state.
   - MAKE ON SAME AS OFF sets the On and Off properties the same.

You cannot create or edit buttons with Unicode fonts on the panel. Any use of the TEXT/IMAGE button to alter or create Unicode font supported buttons must be done in the TPDesign3 Touch Panel Design Program.

5. Press EXIT SAVE CHANGE to close the Text/Image page and return to the Main page.

Using TPDesign3 to Download Bitmaps, Icons, and Fonts

TPDesign3 allows you to download bitmaps, icons, and fonts into your touch panel from an existing touch panel program. Refer to the *TPDesign3 Touch Panel Program* instruction manual for more information. Use the **Download to Panel** button to download a project file.

To download bitmaps, icons and/or fonts from an existing TPDesign3 project file:

1. Launch the TPDesign3 software program and open a project file that contains the desired bitmaps, icons, and fonts.
2. Select **File** from the menu bar to open the File menu.
3. In the File menu, click on **Download to Panel**, this opens the Download to Panel dialog box.
4. Click on the Comm Settings tab to set the communications port, baud rate, and other settings.
5. Then, click the Actions tab to set the communication mode and select which elements of the project file you want to download to the touch panel.
6. In the What To Send area, select one or more of the available options (All Bitmaps, All Icons, All Fonts).
7. Select the mode of communication with the touch panel (RS-232 and AXlink). Confirm that the correct panel is selected by verifying the ID values with the Base Address assigned to the touch panel in the Protected Setup page.
8. After clicking **Connect**, the Available Panels list appears in the Available Panels field. Click **Begin** to start downloading the project file into the panel.
9. After completing the download, the bitmaps, icons and fonts that were downloaded are now accessible via the BITMAPS, ICONS and FONTS menus.

Creating a Bargraph and Joystick

Bargraphs are level monitors and adjustable level controls. These levels can be configured to monitor and adjust audio outputs and lighting levels.

Joysticks are vertical and horizontal direction controllers you can use for camera for pan and tilt control. Before starting, make sure to connect the touch panel to your Controller; otherwise, the joystick will not work properly.

Adding a bargraph or joystick button

Create a new button using the Add operation bar in the BUTTON menu.

1. Press BUTTON in the Edit bar to open the BUTTON menu.
2. Press PROPERTIES in the BUTTON menu to open the PROPERTIES operation bar.
3. Press any button to open the Button Properties page.
4. Press BUTTON TYPE to open the BUTTON TYPE menus. Choose a button type to open its Button Properties page.

Setting Bargraph and Joystick Properties

Use the Button Properties page to set channel, level, and button colors. Refer to the *Setting the variable text code* section on page 18 and the *Setting the channel code* section on page 17 for further information. Refer to the *Setting the button colors for channel-off conditions* section on page 18 for more information on colors for channel-off conditions.

Setting the level code

Level buttons set the device and number codes for the touch panel.

Joysticks use two level numbers. The first is for the X-axis and the second for the Y-axis. You only need to specify the first level.

1. Press DEV to open a keypad and set the device number.
2. Enter 1, 2, 3, or 4 in the keypad. The programming software uses device codes 1 - 4 to identify the touch panel.
3. Press ENTER to save the level device number, close the keypad, and return to the Button Properties page.
4. Press NUM to open a keypad and set the level number assigned to the device.
5. Enter a number 1 – 8. Each device can have from 1 – 8 levels **except** joysticks, where the range is 1 – 7.
6. Press ENTER to save, close the keypad, and return to the Button Properties page.

Programming

You can program the touch panel, using the commands in this section, to perform a wide variety of operations using Axcess Send_Commands and variable text commands. Use the commands described in this section to program the touch panel.

Serial Commands

Serial Commands are used in the AxcessX Terminal Emulator mode. These commands are case insensitive.

Serial Commands	

?PAR
Returns panel parameters to the PC terminal.
	Panel parameters include: firmware version, device number, mouse type, output resolution, number of devices, cursor enable, brightness (always=0), and contrast (always=0).
	Syntax:
	`"?PAR"`
	Example:
	`?PAR`
	Requests the information.

$SC
Sends a serial port send_command within a panel, as if sent from Axcess.
	Syntax:
	`"$SC <device offset>,"'<send_command>,<variable text #>,<data>'""`
	Variables:
	device offset = Device number
	variable text # = The variable text number value on the touch panel.
	Example:
	`$SC 1,"'@TXT',2,'TEXT'"`
	The string is sends the command to put text on a button with a variable text value of 2. It is crucial that all the correct ' and " be used with no spaces after the commas.

CALIBRATE
Starts touch panel calibration.
	Syntax:
	`"CALIBRATE"`
	Example:
	`CALIBRATE`
	Starts the calibration sequence mode on the touch panel.

CHECK CAL
Enters the calibration test mode.
	Syntax:
	`"CHECK CAL"`
	Example:
	`CHECK CAL`
	Begins the calibration check mode on the touch panel.

Serial Commands (Cont.)	
ECHO ON Turns On character echo.	Syntax: "ECHO ON" Example: ECHO ON The character echo is sent back to the computer.
ECHO OFF Turns Off character echo.	Syntax: "ECHO OFF" Example: ECHO OFF The character echo is not sent back to the computer.
GET CAL Gets the calibration variables.	Syntax: "GET CAL" Example: GET CAL Gets the calibration variables on the touch panel.
HELLO Verifies that serial communication is working properly.	Syntax: "HELLO" Example: HELLO If the communication is active and working, the response is "How are you doing?".
MOUSE Turns on serial mouse or other touch devices.	Syntax: MOUSE <mouse type> Variables: mouse type = 00: Mouse cursor Off 01: Microsoft® serial mouse/cursor On Example: MOUSE 01 Turns on Microsoft® compatible serial mouse. Refer to the *@MOU* section on page 34 for the chart describing the BIT information and definitions.
RESET Cycles power on the touch panel.	Syntax: "RESET" Example: RESET Cycles the power on the touch panel. Once the firmware is downloaded, send this command to recycle power to the panel. This command prevents the user from having to physically re-cycling power on the unit.
SET CAL Sets the calibration variables.	Syntax: "SET CAL <X Multiplier> <X Offset> <Y Multiplier> <Y Offset>" Example: SET CAL 2F 3A 2B 62 Sets the calibration values on the touch panel.

Serial Commands (Cont.)	

SETUP
Puts the touch panel on the Setup Page.
	Syntax:
	`"SETUP"`
	Example:
	`SETUP`
	Flips the touch panel to the Setup page.

VER
Restores the current version.
	Syntax:
	`"VER"`
	Example:
	`VER`
	Returns the current version of the main firmware.

WORKING?
Verifies the communication between the touch panel and the Terminal Emulator.
	Syntax:
	`"WORKING?"`
	Example:
	`WORKING?`
	Response:
	`$SC 1,"'CPAGE72-Main Page'"`
	Responding touch panel turns its Main page the color white. This command verifies serial communication. The CV6 panel must have a page named Main Page for this command to work properly.

ZAP!
Clears all memory.
	Syntax:
	`"ZAP!"`
	Example:
	`ZAP!`
	Clears all memory and erases all buttons, pages, drawings, and symbols.

Only use the ZAP! command to erase the saved data in the touch panel; data cannot be recovered after it is erased.

System Send_Commands

System Send_Commands are stored in the Controller and direct the touch panel to perform various operations.

System Send_Commands	

$SP
Sends data out the serial port with trailing CR and LF.
	Translates the ¦ and translates it as a carriage return to the next line.
	Syntax:
	`"'$SP "<data>"'"`
	Example:
	`SEND_COMMAND TP,"'$SP "CALIBRATE"'"`
	Sends the Calibrate command to another panel through the Serial Port. It is crucial that all the correct ' and " be used with no spaces after the commas.

ABEEP
Outputs one panel beep even if the beep value is set to 0 in the Setup page.
	Syntax:
	`"'ABEEP'"`
	Example:
	`SEND_COMMAND TP,"'ABEEP'"`
	Beeps the panel.

System Send_Commands (Cont.)	
ADBEEP Outputs a double beep even if the double beep value is set to 0 in the Setup page.	Syntax: "'ADBEEP'" Example: SEND_COMMAND TP,"'ADBEEP'" Double beeps the panel.
AKEYB Opens the touch panel keyboard and initializes the text string entry.	The keyboard string is set to null during power-up and stored until power-down. Syntax: "'AKEYB-<text string>'" Variable: text string = 0 - 59 characters Example: SEND_COMMAND TP,"'AKEYB-TOUCH HERE'" Opens the touch panel keyboard with TOUCH HERE in the display.
AKEYP Opens the touch panel keypad and initializes the number string entry.	The keyboard string is set to null during power-up and stored until power-down. Syntax: "'AKEYP-<number string>'" Variable: number string = 0 - 9999 Example: SEND_COMMAND TP,"'AKEYP-1988'" Opens the touch panel keypad with 1988 in the display.
AKEYR Closes/opens the touch panel key-board/pad.	Syntax: "'AKEYR'" Example: SEND_COMMAND TP,"'AKEYR'" Closes the keyboard/keypad opened using the 'AKEYB', 'AKEYP', or 'PKEYP' commands.
BAUD Sets the program port baud rate.	The baud rate can also be set in the Protected Setup page's BAUD level indicator. Syntax: "'BAUD <baud rate>'" Variable: baud rate = 38400, 19200, 9600, 4800, 2400, 1200, 600, and 300 Example: SEND_COMMAND TP,"'BAUD 38400'" Sets the Baud rate to 38400.
BEEP Gives an output of one beep.	This beep command sounds one tone for a time length of 50 milliseconds. Syntax: "'BEEP'" Example: SEND_COMMAND TP,"'BEEP'" Activates one beep tone. Beeps the panel if the Beep button is not set to 0. *The BEEP command will disable the beep after a QBEEP command.*

System Send_Commands (Cont.)	
BRIT Adjusts brightness of display.	Syntax: "'BRIT-<level>'" Variable: level = 1 - 8 (1 = minimum; 8 = maximum) Example: SEND_COMMAND TP,"'BRIT-8'" Sets to highest brightness level.
CALIBRATE Starts the touch panel calibration sequence.	Syntax: "'CALIBRATE'" Example: SEND_COMMAND TP,"'CALIBRATE'" Starts the calibration operation on the touch panel.
CLOCK Sets the time and date.	Syntax: "'CLOCK <mm-dd-yy> <hh:mm:ss>'" Variables: mm = 01 - 12, dd = 01 - 31, yy = 00 - 99 hh = 00 - 23, mm = 00 - 59, ss = 00 - 59 Example: SEND_COMMAND TP,"'CLOCK 02-08-98 19:16:00'" Sets the touch panel's date to February 8, 1998, and time to 7:16 p.m.
CURSOR Turns the cursor display On or Off if the touch device has a cursor.	Syntax: "'CURSOR <OFF/ON>'" Variables: Off = 0 and On = 1 Example: SEND_COMMAND TP,"'CURSOR 0'" Turns the cursor display Off.
DBEEP Gives a double beep output.	This command only works if the Double Beep value in the Protected Setup page is set to On. Syntax: "'DBEEP'" Example: SEND_COMMAND TP,"'DBEEP'" Double beeps the panel.
ILEV Inverts the joystick axis.	Syntax: "'ILEV <joystick axis to invert>'" Variables: joystick axis to invert = 0 : Normal G3 joystick (origin: top left) 1 : Invert horizontal axis (origin: top right) 2 : Invert vertical axis (origin: bottom left) 3 : Invert both axes (origin: bottom right) Example: SEND_COMMAND TP,"'ILEV 3'" Inverts the joystick axis to move the origin to another corner.

System Send_Commands (Cont.)	
MOUSE Turns on serial mouse or other touch devices.	Syntax: "'MOUSE <mouse condition>'" Variables: mouse condition = 00: Mouse cursor Off 01: Microsoft® serial mouse/cursor On Example: SEND_COMMAND TP,"'MOUSE 01'" Turns on Microsoft® compatible serial mouse. Refer to the *@MOU* section on page 34 for the chart describing the BIT information and definitions.
PAGE Flips to a page with a specified page name.	Syntax: "'PAGE-<page name>'" Variable: page name = 1 - 50 ASCII characters Example: SEND_COMMAND TP,"'PAGE-MAIN PAGE'" Flips the touch panel to the page named MAIN PAGE.
PKEYP Displays asterisks (*) for keypad entries.	Syntax: "'PKEYP-<number string>'" Variable: number string = 0 - 9999 Example: SEND_COMMAND TP,"'PKEYP-1988'" Displays the touch panel keypad with **** instead of 1988.
PPOF Closes a specific popup page.	Syntax: "'PPOF-<page name>'" Variable: page name = 1 - 50 ASCII characters Example: SEND_COMMAND TP,"'PPOF-Popup Page 1'" Closes Popup Page 1.
PPON Opens a specific popup page.	Syntax: "'PPON-<page name>'" Variable: page name = 1 - 50 ASCII characters Example: SEND_COMMAND TP,"'PPON-Popup Page 1'" Opens Popup Page 1.
QBEEP Stops all beeps.	Syntax: "'QBEEP'" Example: SEND_COMMAND TP,"'QBEEP'" Stops *all* beeps, including "'ABEEP'", "'ADBEEP'", and AXlink beeps.

System Send_Commands (Cont.)	
RESET Cycles power on the touch panel.	Syntax: "RESET" Example: RESET Cycles the power on the touch panel. Once the firmware is downloaded, send this command to recycle power to the panel. This command prevents the user from having to physically re-cycling power on the unit.
SETUP Goes to the Setup page.	Syntax: "'SETUP'" Example: SEND_COMMAND TP,"'SETUP'" Flips the touch panel to the Setup page.
SLEEP Forces the touch panel to screen saver mode.	Syntax: "'SLEEP'" Example: SEND_COMMAND TP,"'SLEEP'" Activates the screen saver mode.
TPAGEOFF Deactivates page tracking.	Syntax: "'TPAGEOFF'" Example: SEND_COMMAND TP,"'TPAGEOFF'" Deactivates the page tracking option.
TPAGEON Activates page tracking.	*See page 28 for a more detailed explanation.*
WAKE Deactivates screen-saver mode and resets the sleep timer.	Syntax: "'WAKE'" Example: SEND_COMMAND TP,"'WAKE'" Deactivates the touch panel screen-saver mode and resets the sleep timer.
XMRT Sets the new network communication retry value for the panel and SoftROM.	Syntax: "'XMRT <number>'" Variable: number = 1 - 15 ASCII characters Example: SEND_COMMAND TP,"'XMRT 9'" Sets the XMODEM wait for character retries to 9.
XMTO Sets the new network communication delay for the panel and SoftROM.	Syntax: "'XMTO <number>'" Variable: number = 4 - 30 ASCII characters Example: SEND_COMMAND TP,"'XMTO 5'" Sets the new XMODEM character delay time to 5 seconds.

System Send_Commands (Cont.)

TPAGEON

Activates page tracking.

Syntax:

```
"'TPAGEON'"
```

Example:

```
SEND_COMMAND TP,'TPAGEON'
DEFINE_DEVICE
TP1 = 128 (*AMX Touch Panel*)
TP2 = 129 (*AMX Touch Panel*)
DEFINE_VARIABLE
TP1_BUFFER[100] (*Buffer for TP1*)
TP2_BUFFER[100] (*Buffer for TP2*)
TRASH[50] (*For Parsing Above*)
DEFINE_START
CREATE_BUFFER TP1,TP1_BUFFER
CREATE_BUFFER TP2,TP2_BUFFER
SEND_COMMAND TP1,'TPAGEON'
SEND_COMMAND TP2,'TPAGEON'
DEFINE_PROGRAM
(***** PAGE TRACKING ROUTINE ******************)
IF(LENGTH_STRING(TP1_BUFFER))
{
  IF(FIND_STRING(TP1_BUFFER,'PAGE-',1)
  {
    TRASH=REMOVE_STRING(TP1_BUFFER,'PAGE-',1)
    SEND_COMMAND TP2,"'PAGE-',TP1_BUFFER"
    CLEAR_BUFFER TP1_BUFFER
   }
   IF((FIND_STRING(TP1_BUFFER,'PPON-',1)))
    OR(FIND_STRING(TP1_BUFFER, ('PPOF-',1)))
   {
    SEND_COMMAND TP2,TP1_BUFFER
    CLEAR_BUFFER TP1_BUFFER
  }
}
IF(LENGTH_STRING(TP2_BUFFER))
{
  IF(FIND_STRING(TP2_BUFFER,'PAGE-',1))
  {
    TRASH=REMOVE_STRING(TP2_BUFFER,'PAGE-',1)
    SEND_COMMAND TP1,"'PAGE-',TP2_BUFFER"
    CLEAR_BUFFER TP2_BUFFER
   }
   IF((FIND_STRING(TP1_BUFFER,'PPON-',1))
    OR(FIND_STRING(TP1_BUFFER',(PPOF-',1)))
   {
    SEND_COMMAND TP1,TP2_BUFFER
    CLEAR_BUFFER TP2_BUFFER
  }
}
(*********************************
```

In this program, the command string is sent to the Controller in the 'PAGE-(page name)' or 'PPON/PPOF-(page name)' format. The string can be captured in the buffer for one panel and sent to the other panel.

If panels are combined using the DEFINE_COMBINE statement, the routine needs to be written only once, and the command is sent back to the same panel.

```
*********************************************************)
(***********END OF PAGE TRACKING ROUTINE**************************)
```

System Send_Commands (Cont.)	

ZAP!
Clears all memory; erases buttons, pages, drawings, and symbols.
	Syntax:
	`"'ZAP!'"`
	Example:
	`SEND_COMMAND TP,"'ZAP!'"`
	Clears all memory and erases all buttons, pages, drawings, and symbols.

Only use the ZAP! command to erase the saved data in the touch panel; data cannot be recovered after it is erased.

Video Send_Commands

Video Send_Commands direct the touch panel to perform various video specific operations.

Video Send_Commands	

@VBR
Sets the video signal brightness.
	Syntax:
	`"'@VBR <ASCII setting for Brightness>'"`
	Variables:
	ASCII brightness setting = 0 (min) - 255 (max)
	Example:
	`SEND_COMMAND TP,"'@VBR 128'"`
	Sets the video brightness to 128.

@VBW
Sets the video to black/white or color.
	Syntax:
	`"'@VBW <ASCII setting for Black/White input>'"`
	Variables:
	Black/White input setting = 0: Color
	1: Black and White
	Example:
	`SEND_COMMAND TP,"'@VBW 1'"`
	Sets the video output to black and white.

@VCT
Sets the video contrast.
	Syntax:
	`"'@VCT <ASCII setting for Contrast>'"`
	Variables:
	ASCII contrast setting = 0 (min) - 255 (max)
	Example:
	`SEND_COMMAND TP,"'@VCT 128'"`
	Sets the video contrast to 128.

Video Send_Commands (Cont.)	
@VDD Sets the video setting for auto-detection or manual detection of the video standard.	Syntax: "'@VDD <ASCII settings for video detection>'" Variables: ASCII detection settings = 1: Auto-detect video input 2: Manual set NTSC 3: Manual set PAL 4: Manual set SECAM Example: SEND_COMMAND TP,"'@VDD 3'" Detects only PAL.
@VFF Video Fast Forward Mode Alogrithm.	The algorithm creates independent vertical sync 60 Hz/50 Hz (NTSC/PAL or SECAM) timing, ignoring the sync from the VCR. During fast forward on many VCRs, the vertical sync timing increases by 8 Hz, thus, causing the video pictures to freeze on our digital hardware. Syntax: "'@VFF <ASCII video fast forward settings>'" Variables: ASCII video settings = 0: Normal 1: On 2: Off (required for Tanberg's non-interlacing equipment) Example: SEND_COMMAND TP,"'@VFF 2" Turns the algorithm Off.
@VHU Sets video hue.	Syntax: "'@VHU <ASCII setting for Hue>'" Variables: ASCII hue setting = 0 (min) - 255 (max) Example: SEND_COMMAND TP,"'@VHU 128'" Sets video hue to 128.
@VSD Resets video default settings.	Resets the following video attributes to their default settings: Brightness, Contrast, Saturation, Hue, Interlace Syntax: "'@VSD'" Example: SEND_COMMAND TP,"'@VSD'" Resets the video defaults.
@VST Sets the video saturation.	Syntax: "'@VST <ASCII setting for Saturation>'" Variables: ASCII saturation setting = 0 (min) - 255 (max) Example: SEND_COMMAND TP,"'@VST 128'" Sets video saturation to 128.

Programming Numbers

The following information provides the programming numbers for colors, fonts, and borders.

Colors can be used to set the colors on buttons, sliders, gauges, and pages. The lowest color number represents the lightest color-specific display; the highest number represents the darkest display. For example, 0 represents light red, and 5 is dark red.

Colors and Programming Numbers

Color	No.	Color	No.
Red	0 - 5	Purple	54 - 59
Orange	6 - 11	Magenta	60 - 65
Yellow	12 - 17	Pink	66 - 71
Lime	18 - 23	White	72 - 77
Green	24 - 29	Light Gray	78 - 83
Aqua	30 - 35	Dark Gray	84 - 86
Cyan	36 - 41	Black	87
Royal	42 - 47	Transparent	255
Blue	48 - 53		

Font styles are used to program the text fonts on buttons, sliders, gauges, and pages. Programming numbers are assigned consecutively when downloaded to the touch panel.

Font Styles and Programming Numbers

No.	Font styles	No.	Font styles
1	Extra small	5	Extra large
2	Small	6	Hollow medium
3	Medium	8	Hollow extra large
4	Large	32 - 255	Variable fonts

You must import variable text fonts into a TPDesign3 project file, and download the project file containing the fonts to the touch panel. The variable fonts are programming numbers assigned by the touch panel during the download process.

Border styles can be used to program borders on buttons, sliders, and gauges.

Border Styles and Programming Numbers

No.	Border styles	No.	Border styles
0	No border	11	Double shadow
1	No border special	20	3-dimensional rectangle 1
2	Single line	21	3-dimensional rectangle 2
3	Double line	22	3-dimensional round 1
4	Triple line	23	3-dimensional round 2
5	Single rounded	24	3-dimensional neon 1
6	Double rounded	25	3-dimensional neon 2
7	Single raised	26	3-dimensional neon blue
8	Double raised	27	3-dimensional neon green
9	Triple raised	40	Single diamond
10	Double-line two single	41	Double diamond

Shorthand Send_Commands

The shorthand commands operate control equipment just like standard Send_Commands still used in a wide variety of AMX products. However, shorthand commands are smaller byte-for-byte, and are processed more efficiently.

The table below lists the shorthand Send_Commands you can use with the AXD-CV6 touch panel. The shorthand command data is 1-byte, non-ASCII format except for pages, passwords, text, and bitmap names.

Shorthand Send_Commands	
@CBF Sets the OFF feedback border color to the specified color.	*This works only if the specified background color is not the same as the current color.* Syntax: "'@CBF',<variable text address>,<color_number>" Variables: variable text address = 1 - 255 color number = See the Colors and Programming Numbers table on page 31. Example: SEND_COMMAND TP,"'@CBF',1,0" Sets the OFF feedback border color to Red for the variable text button 1.
@CBN Sets the ON feedback border color to the specified color.	*This works only if the specified background color is not the same as the current color.* Syntax: "'@CBN',<variable text address>,<color_number>" Variables: variable text address = 1 - 255 color number = See the Colors and Programming Numbers table on page 31. Example: SEND_COMMAND TP,"'@CBN',2,78" Sets the ON feedback border color to Gray for variable text button 2.
@CFF Sets the OFF feedback fill color to the specified color.	*This only works if the specified background color is not the same as the current color.* Syntax: "'@CFF',<variable text address>,<color_number>" Variables: variable text address = 1 - 255 color number = See the Colors and Programming Numbers table on page 31. Example: SEND_COMMAND TP,"'@CFF',1,72" Sets the OFF feedback fill color to White for variable text button 1.
@CFN Sets the ON feedback fill color to the specified color.	*This only works if the specified background color is not the same as the current color.* Syntax: "'@CFN',<variable text address>,<color_number>" Variables: variable text address = 1 - 255 color number = See the Colors and Programming Numbers table on page 31. Example: SEND_COMMAND TP,"'@CFN',1,30" Sets the ON feedback fill color to Aqua for variable text button 1.

Shorthand Send_Commands (Cont.)	
@CPG Sets the specified page's background color to the specified color.	*This only works if the new background color is not the same as the current color.* Syntax: "'@CPG',<color_number>,'<page name>'" Variables: color number = See the Colors and Programming Numbers table on page 31. page name = 1 – 50 ASCII characters Example: SEND_COMMAND TP,"'@CPG',87,'Main Page'" Sets the page title to Main Page, and the color to Black.
@CPP Sets the specified page's background color to the specified color.	*This only works if the specified background color is not the same as the current color.* Syntax: "'@CPP',<color_number>,'<pop-up page name>'" Variables: color number = See the Colors and Programming Numbers table on page 31. pop-up page name = 1 – 50 ASCII characters Example: SEND_COMMAND TP,"'@CPP',54,'Audio Page'" Sets the popup page title to Audio Page, and the color to Purple.
@CTF Sets the OFF feedback text color to the specified color.	*This only works if the specified background color is not the same as the current color.* Syntax: "'@CTF',<variable text address>,<color_number>" Variables: variable text address = 1 – 255 color number = See the Colors and Programming Numbers table on page 31. Example: SEND_COMMAND TP,"'@CTF',1,48" Sets the OFF feedback text color to Blue for variable text button 1.
@CTN Sets the ON feedback text color to the specified color.	*This only works if the specified background color is not the same as the current color.* Syntax: "'@CTN',<variable text address>,<color_number>" Variables: variable text address = 1 – 255 color number = See the Colors and Programming Numbers table on page 31. Example: SEND_COMMAND TP,"'@CTN',1,72" Sets the ON feedback text color to White for variable text button 1.
@IDF The touch panel returns its MS-DOS file name in a string.	Syntax: "'@IDF'" Example: SEND_COMMAND TP,"'@IDF'" The touch panel returns its MS-DOS file name in a string.

Shorthand Send_Commands (Cont.)	
@IDP Queries the touch panel to return a string with the TPDesign3 project name.	Syntax: "'@IDP'" Example: SEND_COMMAND TP,"'@IDP'" The touch panel returns a string containing the TPDesign3 project name.
@MOU Sets the serial touch interface type.	When changing the serial touch device, you must connect the hardware before setting the device type. Syntax: "'@MOU <touch_type>'" Variables: touch type = 00: Mouse cursor Off 01: Microsoft® serial mouse/cursor On 8000: Touch Output to Serial Port (Elo IntelliTouch) Example: SEND_COMMAND TP,"'@MOU 01'" Sets the touch interface to Microsoft serial mouse.
@PPA Removes all popup pages from a specified page.	If no page is specified, the active page is used. Syntax: "'@PPA-<page name>'" Variable: page name = target touch panel page name Example: SEND_COMMAND TP,"'@PPA-Main Page'" If there were several popup pages on 'Main Page' that are active, sending the previous command would remove them all from that page.
@PPF Deactivates a popup page on a touch panel page.	If a page name is empty, the current page is used. If a pop-up page is part of a group, the whole group is deactivated. Syntax: "'@PPF-<popup page name>;<page name>'" Variables: popup page name = target popup page name page name = target touch panel page name Example: SEND_COMMAND TP,"'PPF-Laser Disc 2 Transport Control; Laser Disc Control Page'" Deactivates the Laser Disc 2 Transport Control popup page on the Laser Disc Control Page. If a page name is empty, the current page is used. If the popup page is part of a group, the whole group is deactivated.
@PPK Deactivates a popup page on *all* touch panel pages.	If a pop-up page is part of a group, the whole group is deactivated. Syntax: "'@PPK-<popup page name>'" Variable: popup page name = target popup page name Example: SEND_COMMAND TP,"'@PPK-Laser Disc 2 Transport Control'" Deactivates the Laser Disc 2 Transport Control popup page on *all* touch panel pages.

Shorthand Send_Commands (Cont.)	
@PPN Activates a popup page on a touch panel page.	*If a page name is empty the current page is used.* Syntax: "'@PPN-<popup page name>;<page name>'" Variables: popup page name = popup page name page name = page name Example: SEND_COMMAND TP,"'@PPN-Laser Disc 2 Transport Control; Laser Disc Control Page'" Activates the Laser Disc 2 Transport Control popup page on the Laser Disc Control Page.
@PPX Removes all panel popup pages.	The group that needs to be turned Off must contain the given popup page. Syntax: "'@PPX-<popup page>'" Variable: popup page = popup page name Example: SEND_COMMAND TP,"'@PPX'" Closes all popup pages from all of the pages in the panel.
@PWD Sets the password for the Page Flip on the touch panel.	Syntax: "'@PWD-<page flip password>'" Variable: page flip password = 0 - 9999 Example: SEND_COMMAND TP,"'@PWD-1988'" Sets the page flip password to 1988.
@RDW Redraws the current screen.	Syntax: "'@RDW'" Example: SEND_COMMAND TP,"'@RDW'" Sends a message to the touch panel to redraw the screen.
@SSL Changes the Sleep string sent to the Controller when the touch panel activates sleep mode.	Syntax: "'@SSL-<string>'" Variable: string = alphanumeric characters Example: SEND_COMMAND TP,"'@SSL-Touch Panel Deactivated'" Sends Touch Panel Deactivated to the Controller.
@SST Changes the Startup string sent to the Central Controller when the touch panel powers up.	Syntax: "'@SST-<string>'" Variable: string = alphanumeric characters Example: SEND_COMMAND TP,"'@SST-Touch Panel Power On'" Sends touch panel Power On to the Central Controller when the touch panel powers up.

Shorthand Send_Commands (Cont.)	
@SWK Changes the Wakeup string sent to the Controller when the touch panel is activated.	Syntax: "'@SWK-<string>'" Variable: string = alphanumeric characters Example: SEND_COMMAND TP,"'@SWK-Touch Panel Activated'" Sends Touch Panel Activated to the Central Controller.

Color Send_Commands

Use the color Send_Commands to set the colors for text, buttons, and pages. Use the same command for setting gray scale values only change the color number value to reflect the gray scale (72-86) value.

Color Send_Commands	
CALL Sets the colors for a variable text button.	You must use the variable text assignments to change button colors (see the Colors and Programming Numbers table on page 31). Syntax: "'CALL<variable text address>-<data>'" Variables: variable text address = 1 - 255 data = 6 color number series for: FILL COLOR ON FILL COLOR OFF BORDER COLOR ON BORDER COLOR OFF TEXT COLOR ON TEXT COLOR OFF Example: SEND_COMMAND TP,"'CALL1-1 3 0 0 72 74'" Sets variable text button 1 to: FILL COLOR ON = Red one shade from brightest FILL COLOR OFF = Red three shades from brightest BORDER COLOR ON = Red brightest BORDER COLOR OFF = Red brightest TEXT COLOR ON = White brightest TEXT COLOR OFF = White two shades from brightest

Color Send_Commands (Cont.)	
CBOFF Sets the OFF feedback border color to the specified color.	Syntax: "'CBOFF<variable text address>-<color_number>'" Variables: variable text address = 1 - 255 color number = See the Colors and Programming Numbers table on page 31. Example: SEND_COMMAND TP,"'CBOFF1-72'" Sets the OFF feedback border color to White for the variable text button 1.
CBON Sets the ON feedback border color to the specified color.	Syntax: "'CBON<variable text address>-<color _number>'" Variables: variable text address = 1 - 255 color number = See the Colors and Programming Numbers table on page 31. Example: SEND_COMMAND TP,"'CBON1-87'" Sets the ON feedback border color to Black for variable text button 1.
CFOFF Sets the OFF feedback fill color to the specified color.	Syntax: "'CFOFF<variable text address>-<color_number>'" Variables: variable text address = 1 - 255 color number = See the Colors and Programming Numbers table on page 31. Example: SEND_COMMAND TP,"'CFOFF1-72'" Sets the OFF feedback fill color to White for variable text button 1.
CFON Sets the ON feedback fill color to the specified color.	Syntax: "'CFON<variable text address>-<color_number>'" Variables: variable text address = 1 - 255 color number = See the Colors and Programming Numbers table on page 31. Example: SEND_COMMAND TP,"'CFON1-87'" Sets the ON feedback fill color to Black for variable text button 1.
CPAGE Sets the background page color to the specified color.	Syntax: "'CPAGE<color_number>-<page name>'" Variables: color number = See the Colors and Programming Numbers table on page 31. page name = 1 - 50 ASCII characters *(page names are case sensitive.)* Example: SEND_COMMAND TP,"'CPAGE255-MAIN PAGE'" Sets the background color on the MAIN PAGE to Transparent.

Color Send_Commands (Cont.)	
CTOFF Sets the OFF feedback text color to the specified color.	Syntax: "'CTOFF<variable text address>-<color_number>'" Variables: variable text address = 1 - 255 color number = See the Colors and Programming Numbers table on page 31. Example: SEND_COMMAND TP,"'CTOFF1-87'" Sets the OFF feedback text color to Black for variable text button 1.
CTON Sets the ON feedback text color to the specified color.	Syntax: "'CTON<variable text address>-<color_number>'" Variables: variable text address = 1 - 255 color number = See the Colors and Programming Numbers table on page 31. Example: SEND_COMMAND TP,"'CTON1-72'" Sets the ON feedback text color to White for variable text button 1.

Variable Text Send_Commands

Use variable text Send_Commands to set the borders, fonts, and text.

Variable Text Send_Commands	
!B Sets a specific button to On or Off.	Syntax: "'!B',<variable text address>,<ON/OFF>" Variables: variable text address = 1 - 255 ON = 0 OFF = 1 Example: SEND_COMMAND TP,"'!B',128,1" Sets button 128 Off.
BTOF Sets a specific button's active state to Off.	Syntax: "'BTOF<variable text address>'" Variable: variable text address = 1 - 255 Example: SEND_COMMAND TP,"'BTOF255'" Sets the state for button 255 to Off.
BTON Sets a specific button's active state to On.	Syntax: "'BTON<variable text address>'" Variable: variable text address = 1 - 255 Example: SEND_COMMAND TP,"'BTON128'" Sets the state for button 128 to On.

Variable Text Send_Commands (Cont.)	
!C Sets the border, font, and text in one command.	Syntax: "'!C',<variable text address>,<border style>,<font size>,'<new button text>'" Variables: variable text address = 1 - 255 border style = See the Border Styles and Programming Numbers table on page 31. font size = See the Font Styles and Programming Numbers table on page 31. new button text = Enter button text to appear on the button. Example: SEND_COMMAND TP,"'!C',1,6,6,'VCR PLAY'" Sets the title on variable text button one to VCR PLAY using a hollow medium font, and changes the border attribute to double rounded.
!F Shorthand version of 'FONT' command.	Syntax: "'!F',<variable text address>,'<font size>'" Variables: variable text address = 1 - 255 font size = See the Font Styles and Programming Numbers table on page 31. Example: SEND_COMMAND TP,"'!F','1,'6'" Changes the font on the variable text button one to hollow medium.
FONT Changes the font size (or style) of the text in a specific button.	Syntax: "'FONT<variable text address>-<font size>'" Variables: Variable text address = the number of the variable text button (1-255) Font size/style = the size or style of the font (1-255). See the Font Styles and Programming Numbers table on page 31 for more information. Example: SEND_COMMAND TP,"'FONT1-6'" Changes the font on the variable text button one to hollow medium. Variable fonts start at a value of 32.
!I Shorthand version of 'ICON' command.	Syntax: "'!I',<variable text address>,'<border style>'" Variables: variable text address = 1 - 255 border style = 0 - 41. See the Border Styles and Programming Numbers table on page 31. Example: SEND_COMMAND TP,"'!I',1,'6'" Changes the border style on the variable text button one to double rounded.
ICON Changes the border style of a specific button.	Syntax: "'ICON<variable text address>-<border style>'" Variables: variable text address = 1 - 255 border style = See the Border Styles and Programming Numbers table on page 31. Example: SEND_COMMAND TP,"'ICON25-6'" Changes the border style on the variable text button 25 to double-rounded.

Variable Text Send_Commands (Cont.)	
!T Shorthand version of 'TEXT' command.	Syntax: "'!T',<variable text address>,'<new button text>'" Variables: variable text address = 1 - 255 new button text = 1 - 60 characters Example: SEND_COMMAND TP,"'!T',1,'VCR PLAY'" Changes the title on variable text button one to VCR PLAY.
TEXT Enters text on a button.	Use the | character to display text on multiple lines. Syntax: "'TEXT<variable text address>-<new button text>'" Variables: variable text address = 1 - 255 new button text = Enter button text to appear on button. Example: SEND_COMMAND TP,"'TEXT2-VCR|PLAY'" Sets the VCR and PLAY text on variable button 2. The | character places VCR on a text line above PLAY on the button.

Shorthand Variable Text Commands

The table below lists the shorthand variable text commands you can use with the touch panel. The shorthand command data is one-byte, non-ASCII format except for pages, passwords, text, and bitmap names.

Shorthand Variable Text Commands	
@BMP Adds a bitmap file to a button.	Bitmap files are imported into TPDesign3; the numbers are assigned by the touch panel during the download process. Syntax: "'@BMP',<variable text address>,'<bitmap>'" Variables: variable text address = 1 - 255 bitmap = Bitmap chosen from a file location Example: SEND_COMMAND TP,"'@BMP',85,'Bitmap1'" Adds the Bitmap1 file to button 85.
@BOR Sets the border style on a button.	Syntax: "'@BOR',<variable text address>,<border style>" Variables: variable text address = 1 - 255 border style = See the Border Styles and Programming Numbers table on page 31. Example: SEND_COMMAND TP,"'@BOR',65,11" Sets the border style to double shadow on button 65.

Shorthand Variable Text Commands (Cont.)

@BMF

Sets multiple attributes to a button, slider, or gauge.

This command allows you to program up to 12 attributes on one command line.

Syntax:

```
"'@BMF',<variable text address>,'<attribute data>'"
```

Variables:

variable text address = 1 - 255

attribute data:

'%R,<left>, <top>, <right>, <bottom>' = Sets the rectangle position.

'%B',<border styles> = See the Border Styles and Programming Numbers table on page 31.

'%F',<font styles> = See the Font Styles and Programming Numbers table on page 31.

'%T',<button text > = ASCII characters (empty is clear)

'%P',<bitmap> = Bitmap filename (empty is clear)

'%I',<icon> = 1 - 255 (icon numbers are assigned in TPDesign3 project file)

'%J',<text alignment> = 1 - 9 as shown the following alignment chart:

1	2	3
4	5	6
7	8	9

For %C1-%C6, see the Colors and Programming Numbers table on page 31.

'%C1',<on-state fill color>

'%C2',<off-state fill color>

'%C3',<on-state border color>

'%C4',<off-state border color>

'%C5',<on-state text color>

'%C6',<off-state text color>

Example:

```
SEND_COMMAND TP,"'@BMF',255,'%T POWER |ON'
'%B','4','%C1','72'"
```

Sets the text on button 255 to POWER ON (appears on two lines), adds a triple-line border, and sets the On-state color to White.

@ENA

Enables/disables buttons based on the variable text channel.

Syntax:

```
"'@ENA',<variable text address>,<disable button on/off>"
```

Variables:

variable text address = 1 – 255

disable button on/off=

1 : button disabled

0 : button enabled

Example:

```
SEND_COMMAND TP,"'@ENA',128,1"
```

Disables the button with variable text channel 128. This button will stop responding to pushes completely, until it is sent an Enable command. Nothing short of a touch panel SoftROM firmware reload will re-enable the button. Reloading the touch panel file, reloading the Axcess program, or resetting power on the panel or master will not re-enable the button. It must be sent an Enable command once it has been disabled.

Shorthand Variable Text Commands (Cont.)	
@FON Sets the text font on a button.	Syntax: "'@FON',<variable text address>,<font style>" Variables: variable text address = 1 - 255 font style = See the Font Styles and Programming Numbers table on page 31. Example: SEND_COMMAND TP,"'@FON',56,32" Sets the text on button 56 to variable font style 32.
@ICO Assigns an icon to a button.	Syntax: "'@ICO',<variable text address>,<icon file number>" Variables: variable text address = 1 - 255 icon file number = 1 - 255 Example: SEND_COMMAND TP,"'@ICO',16,12" Adds icon 12 on button 16. Setting the icon value to 0 clears the appearance of the icon.
@JUS Sets the text alignment on a button.	Syntax: "'@JUS',<variable text address>,<text alignment>" Variables: variable text address = 1 - 255 text alignment = 1 - 9 as shown in the following alignment chart: 1 2 3 4 5 6 7 8 9 Example: SEND_COMMAND TP,"'@JUS',9,5" Centers the text on button 9.
@SHO Sets a specific button to on or off.	Syntax: "'@SHO',<variable text address>,<button on/off>" Variables: variable text address = 1 - 255 button on/off= 0 : button Off 1 : button On Example: SEND_COMMAND TP,"'@SHO',128,0" Sets button 128 off.

Shorthand Variable Text Commands (Cont.)	

@TXT
Adds text to a button.
	Use the | character to display text on multiple lines.
	Syntax:
	`"'@TXT',<variable text address>,'<text>'"`
	Variables:
	variable text address = 1 - 255
	text = Enter button text to appear on the button.
	Example:
	`SEND_COMMAND TP,"'@TXT',2,'VCR|PLAY'"`
	Sets the VCR and PLAY text on variable button 2. The | character places VCR on a text line above PLAY on the button.

@UNI
Adds Unicode text to a button.
	Characters for Middle Eastern languages, such as Arabic, are not supported within the Unicode fonts because they are bi-directional. Buttons with Unicode fonts can only be created and edited using TPDesign3 Touch Panel Design Program.
	Syntax:
	`"'@UNI',<variable text address>,'<text>'"`
	Variables:
	variable text address = 1 - 255
	text = Enter button text to appear on button.
	Example:
	`SEND_COMMAND TP,"'@UNI',2,'Foreign Text'"`
	Sets the Foreign Text on variable button 2.

Button String Commands

The table below lists string commands you can assign to buttons by using the touch panel editor. Select the PROPERTIES option in the Edit bar, press the target button, and **enter the string command with the Touch Panel keyboard**.The string command is sent to the control system when you press the button.

Button String Commands	

$CU
Turns the cursor display On and Off.
	Syntax:
	`"$CU <cursor value>"`
	Variable:
	cursor value = 0 (Off) and 1 (On)
	Example:
	`$CU 0`
	Turns the cursor Off.

$SC
Sends a serial port send_command within a panel, as if sent from Axcess.
	Syntax:
	`"$SC <device offset>,"'<send_command>,<variable text #>,<data>'""`
	Variables:
	device offset = Device number
	variable text # = The variable text number value on the touch panel.
	data = 0 - 59 characters
	Example:
	`$SC 1,"'@TXT',2,'TEXT'"`
	The string sends the command to put text on a button with a variable text value of 2.
	Its crucial that all the correct ' and " be placed with no spaces after commas.

Button String Commands (Cont.)	
$SL Activates sleep mode on the touch panel.	Syntax: "$SL" Example: $SL Activates sleep mode on the touch panel.
$SP Sends data out through the serial port of the source panel to a destination panel.	Syntax: "$SP"<data>"" Variables: data = Serial string command Examples: $SP "CALIBRATE" Sends the Calibrate command to another panel through the Serial Port. $SP "$SC 1,"'@TXT',1,'TEST'"" Uses the $SP command to send a Send Command ($SC ***) to another panel through the Serial Port. This is an on-panel button string that is entered using on-screen keyboard.
$ST Sets the idle time to activate sleep mode for a touch panel in 1-minute increments.	When the touch panel's input time matches the sleep time, the panel goes to sleep. Syntax: "$ST<sleep timeout>" Variable: sleep timeout = 1 (Off) - 120 (in minutes) Example: $ST 5 Sets the touch panel's sleep time to 5 minutes.
WORKING? Verifies the communication between touch panels through the use of the on-panel editor.	Responding touch panels tell the sending touch panel to change its Main page to the color white. Syntax: "WORKING?" Example: • CV6 panel serial port is connected to TPI program port. • CV6 panel wants to verify communication between the TPI and itself. • CV6 panel issues "WORKING?" to its serial port. It will be sent as $SP "WORKING?". • TPI receives the command and responds to the CV6 panel by telling it to set the Main page background to white. Thus communication is verified.

Upgrading the Firmware

To upgrade the firmware, your PC must be connected to the DB-9 program port, on the controller, using a DB-9 programming cable. The panel must also be connected to the Controller via a mini-AXlink connection.

If power is lost during the download process, the unit powers up with the same set of code prior to the download.

CAUTION

There is a small window during which a loss of power can be catastrophic. If power is lost between the erase of flash memory and the completion of copying the new boot code from RAM to flash memory, the unit will not operate at all when power returns.

If you have not already installed the SoftROM program, do so by following the steps on the AMX Control Disc.

Configuration

To configure the communication setting for the SoftROM program:

1. Press **F1** to open the Configuration screen.
2. Using the up/down arrow keys, select the communications port you are using to interface with the controller and press **ENTER**.
3. Using the right arrow key, move to the BAUD RATE column. Then, use the up/down arrow keys to select the interface communications speed and press **ENTER**. Be sure the BAUD RATE selections match the setting on the Controller.
4. Press **F10** to save the communication settings and exit the Configure screen.

Downloading the Firmware

1. Press **F5** to acquire the list of online programmable devices.

NOTE

You can press F2 to select all ONLINE programmable devices and F3 to clear all devices.

2. Using the up/down arrow keys, select your firmware version listed in the Firmware column of the screen, and press **ENTER**.
3. Using the Tab key, switch to the ONLINE MASTERS list and select the device to be programmed.
4. Press **ENTER** for each device as it is selected.
5. Press **F4** to program the selected device; a loading message appears.
6. Press **F5** to refresh the screen. Verify that the selected device has the correct firmware version. If any devices still appear with an old firmware version, repeat steps as necessary until it appears with the correct version.

Firmware can be downloaded to multiple device numbers automatically. If multiple devices are selected, the bottom half of the loading bar indicates the percentage complete for the selected devices.

7. Press **F10** to exit the SoftROM program.

Replacing the Battery

There is one lithium battery on the touch panel card, with a life of approximately 2.5 years. It protects stored commands and pages against a power outage. The battery is not used when DC power is supplied to the touch panel. Write down the replacement date on a label by adding 2.5 years to the date of installation; attach it to the panel for future reference.

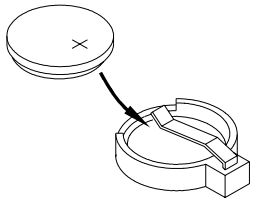


FIG. 21 Lithium battery and socket

CAUTION

Static electricity can damage electronic circuitry. Before removing the touch panel circuit card from the enclosure, discharge any accumulated static electricity from your body and flat-blade tool by touching a grounded metal object.

Before replacing the lithium battery, make sure you have a current copy of the pages stored in the touch panel. This will avoid any inadvertent loss of data or service outage. To replace the lithium battery, you will need a Phillips screwdriver and a non-conducting flat-blade tool to slip under the battery to pry it up and out of the socket.

AXD-CV6 Battery Replacement

To remove the lithium battery from the touch panel:

1. Discharge the static electricity from your body by touching a grounded object and remove the magnetically attatched the faceplate.
2. Removing the main unit:
   - From the BB-CV6 conduit/wallbox by carefully unscrewing the four-#4 screws from the threaded inserts located along the sides of the housing. Refer to FIG. 2 on page 3 for more information.
   - From solid/flat surface by carefully unscrewing the four-#4 screws from the threaded inserts located along the sides of the housing. Refer to FIG. 4 on page 5 for more information.
   - From a plasterboard (drywall) surface by carefully unscrewing the two screws from the drywall clips. Once these drywall clips are separated from their screws, the drywall clip set must be re-order from AMX before the unit can be mounted to this type of surface again. Refer to FIG. 8 on page 7 for more information.
3. Pull the touch panel forward until the whole unit slides out of the surface/wallbox.
4. Disconnect all the connectors to remove the touch panel from the conduit/wallbox or equipment rack.

5. Place the touch panel facedown onto a soft cloth and begin unscrewing the four screws securing the housing to the main unit. Refer to FIG. 4 on page 5 for more information.
6. Remove the touch overlay's ribbon cable connectors from the circuit card.
7. Remove the upper circuit card and turn it over.
8. Carefully pry the battery out of its socket and insert the new battery.
9. Replace the circuit card and insert/tighten the circuit card spacers.
10. Connect the touch overlay's ribbon cable connector to the circuit card.
11. Re-insert and tighten the housing screws to its four locations along the outside of the housing box.
12. Return the touch panel to the backbox or equipment rack and connect the AXlink connector.
13. Insert the four mounting screws/two expansion clips, and tighten.
14. Put the magnetic faceplate back onto the main unit and verify that it is secure.

AMX reserves the right to alter specifications without notice at any time.

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